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Product Innovation Methodology Helps Increase Revenues 300%

Buffalo Filter was started in 1991 in Buffalo, NY as a small, privately-owned company manufacturing its own brand of filters and smoke evacuation systems. Since its acquisition by Medtek Devices in 1995, Buffalo Filter has grown into an industry leader that currently manufactures hundreds of Original Equipment Manufacturer (OEM), private label, and co-labeled products. In addition, Buffalo Filter continues to offer its own brand of technologically advanced smoke evacuation equipment, filters and accessories used by a wide variety of medical specialties. The company's products and services are available throughout the United States and in more than 52 countries world-wide.

The company's products are used to evacuate and filter hazardous smoke plume and/or aerosols created by lasers, electro-surgical tools, and ultrasonic devices used during over 95% of all surgical procedures. Proven to contain toxic gases, live cellular material (including blood fragments) and viruses, smoke plume may cause respiratory and eye irritations or nausea in healthcare professionals. Additionally, it may create visual problems for the surgeon which can affect patient safety.

Buffalo Filter employs approximately 50 people at its corporate headquarters, located in Amherst, NY. Each year the company manufactures approximately \$17,500,000 worth of equipment for its extensive global network of dealers, distributors, and OEM customers.

Situation

Several years after Chris Palmerton, President and CEO, acquired Buffalo Filter, he began working towards his vision of growing the company at an aggressively accelerated rate compared to previous years. He recognized

that the development of new products was a critical element toward pursuing the market opportunities that would fuel the desired growth to take Buffalo Filter into the future. OEM customers were asking for new products to differentiate themselves from others in the marketplace. Growth in use of lasers and electro-surgical tools during surgery created new opportunity for specialized enhancements to existing products; and the trend toward less invasive laparoscopic surgery created a need for entirely new products to remove smoke. Palmerton realized these mounting opportunities for growth needed to be capitalized on quickly.

This urgency resulted in the organization challenging their engineering team to meet the new product development demand head on. However, this new focus quickly became a strain as other targets, projects, and deadlines were not being met and completed. While customers continued to exert pressure by demanding new product devel-

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Packaging and assembly of tubing products in Buffalo Filter's Clean Environment Room (CER).

Manufacturing Transformations – Help is Available

Global competition has finally grabbed the attention of Americans. Whether they lament job losses and trade deficits or celebrate low consumer prices and export growth, Americans have an opinion regarding globalization. Globalization is not news to manufacturers caught in the commodity trap, trying to compete on price in a high cost production environment. They have been struggling with globalization for a decade or more. In a related deluge of pronouncements, government, trade associations and think-tanks have made their pronouncements: U.S. manufacturers must employ creativity and innovation to differentiate their products, services and business models from their offshore competitors. Although this is not news to most manufacturers, it is easier said than done. There are, however, benefits to the broad recognition of the challenges of global competition and the need for a manufacturing transformation. Help is available...more about that later.

Transformations from a commodity to a highly differentiated business are never easy for any company because they require changes in culture, thinking and competencies from everyone. This is real reengineering, not process improvement. Companies that successfully implement these transformations usually use a common approach. They start by focusing on the needs of their customers, build a strategy around their market opportunities, and implement process improvements to support their strategy. A revitalized new product development process is usually a key element in the transformation. Buffalo Filter, our cover story, is an excellent example.

Manufacturers do not have to face their transformations alone; some examples of help are contained in this newsletter. For example, the federal government provides R&D funding, technical support, and support from regional

manufacturing field agents (Insyte Consulting is the federal manufacturing extension center in WNY). New York State provides technical support and funding for research, product development, business transformations, training and power allocations (Insyte Consulting is also the NYS regional technology development center). Locally, universities and economic development agencies help with technical equipment, business assistance, and loans. Don't forget to add R&D tax credits to your list.

See the insert for help to redesign your new product development process.

There is so much help available that the opportunities can be confusing. In deciding what help to pursue, my advice is to follow the path of companies that have achieved successful transformations. Build a strategy around your market opportunities and use only those assistance programs that advance your strategy. Don't chase opportunities only because they are "free." Any activity, regardless of the cost, that is not aligned with your transformation strategy is a waste that leaves you further behind in the global competition. Call us if you need a guide through the maze of assistance programs; we are here to help.

Robert J. Martin

\$200,000 Investment Announced by BDF

The Western New York Business Development Fund (BDF) has approved one new investment during the first half of 2006. The BDF will make an investment of \$200,000 in FALCONEER Technologies, LLC, a technology-based startup in the WNY area.

FALCONEER Technologies, LLC provides software and services to process (non-discrete) manufacturing plants. FALCONEER software audits manufacturing process performance in real-time and advises on any "abnormal" conditions that are detected. These advisories could be related to instrumentation, process equipment, process conditions or Key Performance Indicators (KPIs). This real-time auditing and advice helps the plant improve product quality and process reliability and uptime while reducing raw material, energy, and other operational costs. Unlike existing monitoring solu-

tions, which are complicated, labor-intensive and difficult to update and maintain, FALCONEER software combines the customer's knowledge of its processes with a computer's powerful analysis capabilities to quickly adapt to the manufacturing process, such that the customer's own engineers can readily maintain the adapted software.

The BDF is a collaborative partnership among the TDC Foundation, Empire State Development Corporation, Erie County Industrial Development Agency and University of Buffalo Foundation. BDF invests in two phases, with Phase 1 amounts up to \$50,000 and Phase 2 amounts to \$150,000. Both Phase 1 and Phase 2 have matching requirements from the company founders or outside investors.

The BDF is actively soliciting business plans from new technology businesses in



Doug Lenz (left), president, FALCONEER Technologies, LLC accepts BDF check from Robert Martin, president, Insyte Consulting.

the WNY area. For more information about BDF, contact Jack McGowan at Insyte Consulting, 716-636-3626 or jmcgowan@insyte-consulting.com. ❖



NASA Program Helps ENrG Inc.

ENrG Inc. (ENrG) is a WNY company specializing in the development and manufacture of ceramic membrane and coating technologies for energy applications such as solid oxide fuel cells (SOFC) and gas separation. The company recently took advantage of NASA's Space Alliance Technology Outreach Program (SATOP) to obtain technical assistance with a critical facility cooling problem.

Manufacturing of ceramic components requires running multiple furnaces at temperatures exceeding 1300 degrees Celsius that are located in a Class 10000 clean room environment. The problem is the ambient temperature in the clean room during summer months can often exceed 100 degrees Fahrenheit. This makes the working condition very uncomfortable and affects personnel productivity. It is not within the company's budget to air condition

the space.

ENrG turned to SATOP for advice on how to effectively cool the room and maintain the clean room standards. After completing and sending to SATOP the one page Request for Technical Assistance, the company was contacted by SATOP Alliance Partner, Environmental Services Inc., a contractor to NASA at the Kennedy Space Center with expertise in thermal dynamics and heat transfer. Within a few weeks, ENrG received a detailed solution with various options. According to Bill Sunderlin, Operations Manager at ENrG, responsible for construction of ENrG's new clean room facility, "The direction we had planned to take to solve the problem ourselves was completely opposite to the solution suggested by Environmental Services."

ENrG recently moved into a new clean

room facility and utilized several of the principles and design concepts provided through the SATOP request. The original request addressed the layout of a furnace room for a different building but ENrG opted for an alternative location. The new facility is larger and does not pose the same problems as the old facility. ENrG expects the knowledge gained from the SATOP Alliance Partner will be useful if they encounter similar problems in the new facility. Sunderlin said, "SATOP was very easy to use, cooperative, excellent follow-up and provided very useful information. ENrG will not hesitate to request assistance again when we experience a technical problem for which we do not have the expertise."

For more information about how your company can take advantage of SATOP, contact Ellen Reen at 716-636-3626, or email ereen@insyte-consulting.com. ❖

SBIR Funding Program Increases Focus on Manufacturing

The federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs provide grants and contracts to U.S. businesses with 500 or fewer employees to conduct innovative research and development with strong commercialization potential. These programs awarded over \$2 billion in 2005.

Agencies that award funding under SBIR/STTR are required to give high priority to manufacturing-related research and development. The government's interest in manufacturing-related R&D is focused in four main areas: (1) unit process level technologies that create or improve manufacturing processes; (2) machine level technologies that create or improve manu-

Three Phase of SBIR/STTR			
Phase	Typical Funding	Work Period	Objectives
Phase I	Up to \$100,000	Six Months	Proof of feasibility
Phase II*	Up to \$750,000	18-24 Months	Primary R&D / Develop to pre-production
Phase III	No SBIR Funding	Ongoing	Commercialization

* Only Phase I winners will be considered for Phase II funding.

facturing equipment; (3) systems level technologies for innovation in the manufacturing enterprise; and (4) environment or societal level technologies that improve workforce abilities and manufacturing competitiveness.

Several participating agencies, including

the Department of Defense, EPA and National Science Foundation have recently issued solicitations that include topics related to manufacturing innovation.

SBIR/STTR is not a fit for all companies or projects. The program's three phase structure is geared toward development of innovative new products or services that will likely not be ready for market for at least two years. Companies that do not have sufficient in-house technical expertise may collaborate or subcontract with a university, research institution or consultant for a portion of the project. If your company's strategy includes development of innovative products, processes or services, SBIR/STTR may be a very valuable tool.

Agencies that participate in the program issue solicitations for proposals throughout the year on a wide variety of research topics. Proposals are evaluated based on their fit with the solicitation, degree of innovation, technical merit and capabilities, and commercialization potential.

As detailed in the table on page 5, eighteen Buffalo-area companies received twenty-five SBIR/STTR awards in 2005. Award amounts ranged from \$69,214 to \$671,114 and covered a wide range of technologies. The data in the table was compiled by Insyte Consulting from the

Book Review

Crossing the Chasm by Geoffrey A. Moore

Insights on taking new products to market.

Though published during the 1990's, *Crossing the Chasm* continues to be a valuable guide to any company wanting to introduce a new product that is dramatically different from traditional products in their market. The author identifies a flaw in most market plans that assumes that initial sales success from sales to the market's early adopters will lead to accelerated sales growth as the mainstream market begins to purchase the product. That is, mainstream, pragmatist buyers may not be as quick to start buying a new product. The short, easy to read book explains issues that prevent the jump to the mainstream market, and how to increase the probability of success.

Although the book's ideas were derived from experiences with high tech products and markets, the principles described provide insights to companies selling less high tech products into more mature markets. The descriptions of behaviors of buyers and competitors in the growth and maturity stages of the product life cycle are very useful in developing marketing strategies and sales plans of any product.

Mr. Moore also wrote a follow-on book titled *Inside the Tornado* which deals with characteristics of the growth stage of a market and product life cycle. *Inside the Tornado* describes the characteristics of the market, buyers and competitors during the growth stage, and provides insights on how to leverage the opportunities, avoid pitfalls, and how to position the company for long term success. ❖

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websites of the eleven government agencies that participate in SBIR/STTR.

Insyte Consulting is designated by the New York State Office of Science, Technology & Academic Research (NYSTAR), as the SBIR/STTR specialist for the Western New York and Finger

Lakes regions. Insyte provides information and assistance to local companies including help identifying appropriate solicitations, coaching about proposal development, and commercialization assistance. Contact us at 716.636.3626 more information or to be added to our SBIR email information list. ❖

Company	Topic	Agency
AMBP Tech Corp.	High Energy Density and High Thermally Rated Pulsed Power Capacitor Devices	DOD
	Dielectric Materials Enhancement via Excimer Laser Processing	DOD
	ZnO HEMTs on Flexible Substrates for Large Area Monolithic Antenna Applications	NASA
Cymfony, Inc.	Fusion of Entity Information from Textual Data Sources	DOD
	Enabling Visualization of Event Information from Unstructured Text	DOD
Dynamic Eye, Inc.	Segmented Ferroelectric Liquid Crystal TFB Glasses	DOD
Gentcorp Limited	Improving Battery Performance for Cardiac Pacing	HHS
Hybrid Technologies	Fabrication of Polymeric Photonic Crystals for Photonics Applications	DOD
Innovative Biotechnologies International	Use of Nanotechnology to Rapidly Detect Human Pathogens	HHS
Integument Technologies, Inc.	Automated Delivery of Pigmentation for Camouflaging Patterns for Composite Shelters	DOD
Lam Design Management, LLC	A 3-D Robot Design to Overcome Arm Dysfunction in Stroke	HHS
Nanodynamics, Inc.	Low-Cost Quasi-Amorphous Carbon Dielectrics for Pulsed Power Capacitors	DOD
	Innovative Material Processing for Warhead Applications	DOD
Process Technology Optimization, Inc.	Self-Contained Ration Heater	DOD
Santanoni Glass and Ceramics, Inc.	Nano-Porous Glass-Coated Amorphous Metal Wires for Integrated Solid-Phase Microextraction Devices	NSF
Tactus Technologies Inc.	Development of ModelGlove - A Virtual Clay Modeling System Using Force/Position Sensor	NSF
	Applying Virtual Surgery Principles to Dissection Simulation	DOEd
Therapyx, Inc.	Tumor Immunotherapy with Biodegradable Microspheres	HHS
Therex, LLC	New Salicylanilides to Treat Oral Diseases	HHS
Ultra-Scan Corp.	Soldier-Borne Biometric Authentication System	DOD
	High Confidence Multimodal Biometric System	DOD
United Environment & Energy, LLC	A New Process for Biodiesel Production Based on Waste Cooking Oils and Heterogeneous Catalysts	USDA
Veritay Technology, Inc.	Next Generation Controlled Impulse Ejection System	DOD
	Kinetic Energy Penetrator Payload for EX 172 Cargo Round	DOD
Virmatics, LLC	Development of Bioinformatics Tools for Virtual Cloning	HHS

DOD - Department of Defense, NASA - National Aeronautics and Space Administration, HHS - Health & Human Services, NSF - National Science Foundation, DOEd - Department of Education, USDA - Department of Agriculture

Tips on Lean New Product Development

Less is More

Lean principles can be applied to product development just as on the factory floor. Multiple behind-schedule projects on an engineer's desk are no different than WIP piled on the factory floor. Often one hears that the engineers are busy and everything is being worked on, yet nothing gets done on time, if at all.

Make the hard choices. Decide which projects do not have to be done or can wait. Identify the few projects that must absolutely get done. Develop selection criteria to sort out and prioritize the best opportunities.

Focus, Focus, Focus

You can't build and sell a product unless you design it first. Throughput in the engineering department is just as important as on the factory floor. Too many engineering projects, just like large batches on the shop floor, increase lead time.

Use the concept of kan-ban, and limit the number of projects in the engineering department. But even with fewer projects, regular managerial oversight is necessary to keep projects on track, to prevent the addition of more features or enhancements, and to minimize distractions. Beware! Sometimes the biggest violator of keeping the design group focused is the boss.

Activity Does Not Mean Results

Just as on the shop floor there's lots on non-value added time and activity. Like machine capacity, engineering time is the finite 'capacity' being allocated in product development, and non-value added activity can be a significant drain.

Map the steps of your product development process — what is done and how long it takes. Do all products have to go through all the steps? Are all steps need-

ed? Can some be shortened? Attack sources of non-value added time.

Standardization Saves Time

Standardization on the production floor reduces non-value added time by reducing non-productive time and improves quality via consistency. 'Reinventing the wheel' wastes limited engineering time.

Design products with forethought of future product variations. Develop a product roadmap so that design 'platforms' are a stepping stone to new products. Design components and subassemblies so that they can be reused.

Insyte Consulting is available to work with companies interested in reducing product development time and improving the success of marketing efforts. Contact us at 716.636.3626 to discuss your product development needs. ❖

Economic Indicators

International Measure	Previous Year	Last Month/Quarter	Current Month/Quarter
Trade Balance - Trade with World, seasonally adjusted, in millions of U.S. dollars	-60,902 — 4/05	-66,417 — 3/06	-68,172 — 2/06
National Measures			
Gross Domestic Product - Current dollars and "real" Gross Domestic Product (seasonally adjusted annual rates) in billions of chained 2000 dollars	10,999.3 — 1st qtr 2005	11,248.3 — 4th qtr 2005	11,394.7 — 1st qtr 2006
Producer Price Index (PPI) - by stage of processing, seasonally adjusted, Durable Goods	135.9 — 12/05	137.3 — 4/06	137.5 — 5/06
Manufacturing Employment - all employees, thousands	14,251 — 5/05	14,244 (p) — 4/06	14,230 (p) — 5/06
Productivity - Manufacturing output per hour, at annual rate, % change qtr. ago	4.8% — 1st qtr 2005	4.7% — 4th qtr 2005	3.8% — 1st qtr 2006
Wages - Manufacturing average hourly earnings of production workers, seasonally adjusted	\$16.54 — 5/05	\$16.80 (p) — 4/06	\$16.80 (p) — 5/06
Manufacturing Sentiment - National Purchasing Managers Index (PMI)	51.8 — 5/05	57.3 — 4/06	54.4 — 5/06
Prime Rate - Bank prime loan rate	5.98 — 5/05	7.75 — 4/06	7.93 — 5/06
Local Manufacturing Measures			
Employment - Buffalo-Niagara Falls, NY Manufacturing employment in thousands, not seasonally adjusted	64.4 — 4/05	62.5 — 3/06	62.0 — 4/06
Manufacturing Sentiment - Buffalo Purchasing Managers Index	64.3 — 4/05	60.6 — 4/06	65.6 — 5/06

P: preliminary, Sources: U.S. Census Bureau, Bureau of Economic Analysis, Bureau of Labor Statistics, Institute for Supply Chain Management, Federal Reserve, New York State Department of Labor, National Association of Purchasing Management - Buffalo Inc.

Buffalo Filter continued from page 1

opment at an increasingly faster pace, regulatory standards for both domestic and international markets grew to be more complex and demanding. It became clear that Buffalo Filter needed to seek out a tactical and strategic solution to help focus the company during this opportunity for growth.

Solution

Buffalo Filter contacted Insyte Consulting about utilizing a New York State Industrial Effectiveness Program grant to provide the company with assistance in making improvements to the product development process, as well as operational improvements across other areas of the company.

In order to improve the product development acceleration issue, the company had to build a new process and cultural foundation from which they could move to the next level in sales growth, while maintaining organizational effectiveness. As a foundation, Insyte Consulting guided the management team in development of a strategic plan that focused the company's efforts directly toward achieving longer term goals.

With a long-term strategy in place, Insyte Consulting assisted Buffalo Filter in their development of a New Product Roadmap. The New Product Roadmap established a robust, methodical approach that would build the company's technical leadership and concurrently support the pursuit of high probability trends in the market.

The next phase of the project used Value Stream Mapping methodology to create a detailed analysis of the engineering team's product development activities. Using a baseline map of the current new product process, Insyte consultants guided the company through development of a streamlined process that eliminated many non-value activities, accommodated the need for occasional 'quick fix' projects, and differentiated major project parameters from minor ones.

Buffalo Filter was also able to partner with Insyte Consulting to develop a streamlined

lean manufacturing process, which heavily contributed to the company's 300% increase in revenue. This improvement enabled Buffalo Filter to dramatically reduce its inventory capital requirement (total turn-over 32 times per year) while achieving more than 99% on time delivery with all shipments. All orders received by 2pm are processed to ship by 5pm, same day. Additionally, in 2004 Buffalo Filter announced the successful achievement of ISO 9001:2000 and ISO 13485:2003 registration from Underwriter's Laboratories, Inc. Achievement of these certifications and registrations cover all design, engineering, manufacturing, sales, and customer service protocols for Buffalo Filter products to meet the required quality standards recognized throughout the United States, Canada, and the European Union.

The benefit of the comprehensive approach of linking company strategy, a new product road map, and process changes meant the root causes of delays in new products were addressed. The newly-organized process for evaluating and prioritizing the latest projects ensured that only the highest potential projects were allowed time from the company's limited resources. The strategic plan and product road map ensured that projects were synergistic in building Buffalo Filter's leadership position in their target market.

During the 30 months since implementation, Buffalo Filter has developed 28 new products (triple the number than it had in the same period before). Revenues have increased by 300%, and there has been a 200% increase in new customers. In addition, the increased revenues have permitted Buffalo Filter to more than double its engineering staff, further adding to the company's competitive strength.

Buffalo Filter continues to use strategic planning and the product road mapping process to guide its future. The company continues to incrementally improve its engineering development process as the staff and number of projects grows. ❖

Firm Benefits

- 28 new products developed
- 300% increase in revenues
- 200% increase in new customers
- Expanded engineering staff
- Initiated process for evaluating and prioritizing new projects

"The product innovation methodology that Insyte Consulting has helped us implement has enabled our company to become a true global player in our market. We have empowered our company to effectively interact with multi-billion dollar organizations to effectively operate in their environment as we create fast turn around, quality products, and virtually flawless on-time delivery. By building on this process, we have seamlessly focused and integrated all our efforts across the manufacturing, engineering, and operational facets of our business."

Chris Palmerton,
President & CEO,
Buffalo Filter

Affiliates News

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ly reflect the views of NYSTAR.

Insyte Consulting assists WNY manufacturing and technology companies to overcome their strategic and tactical business challenges. Whether it's a short-term engagement or a long-term commitment, we create positive change.

Because our employees have hands-on experience, we can help our customers see the opportunities and threats that lie ahead. We're always ready to roll up our sleeves to help get results — results you can measure.

We also place a strong emphasis on teaching our customers proven methods for maintaining and replicating the success that has been achieved. Knowledge combined with common sense — that's how our experience improves your business.

Our experience improves your business



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